THAT WHICH IS CLAIMED IS:

1. A DC-to-DC converter comprising:

at least one power switch;

a pulse width modulation circuit for generating control pulses for the at least one power switch;

an output inductor connected to the at least one power switch;

a thermally compensated current sensor connected to the output inductor for sensing current in the output inductor, the thermally compensated current sensor having a temperature coefficient that substantially matches a temperature coefficient of the output inductor; and

a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the at least one power switch responsive to the thermally compensated current sensor.

2. A DC-to-DC converter according to Claim 1 wherein the at least one power switch comprises at least one field effect transistor.

3. A DC-to-DC converter according to Claim 1 wherein the at least one power switch comprises a low side field effect transistor and a high side field effect transistor connected together.

4. A DC-to-DC converter according to Claim 1 wherein the at least one power switch comprises a low side power switch and a high side power switch connected together.

5. A DC-to-DC converter according to Claim 1 wherein the thermally compensated current sensor is connected in parallel with the output conductor and comprises a resistor and a capacitor connected in series.

6. A DC-to-DC converter according to Claim 5 wherein the resistor of the thermally compensated current sensor comprises a positive temperature coefficient resistor.

7. A DC-to-DC converter comprising:

at least one power switch;

a pulse width modulation circuit for generating control pulses for the at least one power switch;

an output inductor connected to the at least one power switch;

a thermally compensated current sensor connected to the at least one power switch for providing a sensed current related to a current being conducted through the output inductor, the thermally compensated current sensor having a temperature coefficient that substantially matches a temperature coefficient of an on-state resistance of the at least one power switch;

a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the at least one power switch responsive to the thermally compensated current sensor.

8. A DC-to-DC converter according to Claim 7 wherein the at least one power switch comprises at least one field effect transistor.

9. A DC-to-DC converter according to Claim 7 wherein the at least one power switch comprises a low side field effect transistor and a high side field effect transistor connected together.

10. A DC-to-DC converter according to Claim 7 wherein the at least one power switch comprises a low side power switch and a high side power switch connected together.

11. A DC-to-DC converter according to Claim 7 wherein the thermally compensated current sensor is connected between the at least one power switch and the current feedback loop circuit, and the thermally compensated current sensor comprises a resistor.

12. A DC-to-DC converter according to Claim 11 wherein the resistor of the thermally compensated current sensor comprises a positive temperature coefficient resistor.

13. A multiphase DC-to-DC converter comprising:

at least first and second channels each comprising

a power device including a low side power switch and a high side power switch connected together,

a pulse width modulation circuit for generating control pulses for the power device;

an output inductor connected to the power device,

a thermally compensated current sensor connected to the power device for providing a sensed current related to a current being conducted through the output inductor, the thermally compensated current sensor having a temperature coefficient that substantially matches a temperature coefficient of an on-state resistance of the low side power switch,

a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the power device responsive to the thermally compensated current sensor.

14. A multiphase DC-to-DC converter according to Claim 13 wherein each of the power switches comprises a field effect transistor.

15. A multiphase DC-to-DC converter according to Claim 13 wherein the thermally compensated current sensor is connected between the power device and the current feedback loop circuit, and the thermally compensated current sensor comprises a resistor.

16. A multiphase DC-to-DC converter according to Claim 15 wherein the resistor of the thermally compensated current sensor comprises a positive temperature coefficient resistor.

17. A multiphase DC-to-DC converter comprising:

at least first and second channels each comprising

a power device including a low side power switch and a high side power switch connected together,

a pulse width modulation circuit for generating control pulses for the power device;

an output inductor connected to the power device,

a current sensor connected to the power device for providing a sensed current proportional to a current being conducted through the output inductor,

a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the power device responsive to the current sensor; and

a feedback resistive network connected between an input of the pulse width modulation circuit of each of the at least first and second channels and the output terminal, and comprising a negative temperature coefficient resistor having a temperature coefficient that substantially matches a temperature coefficient of an on-state resistance of the low side power switch of the power device of the at least first and second channels.

18. A multiphase DC-to-DC converter according to Claim 17 wherein each of the power switches comprises a field effect transistor.

19. A method of regulating a DC-to-DC converter comprising at least one power switch, a pulse width modulation circuit for generating control pulses for the at least one power switch, an output inductor connected to the at least one power switch, and a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the at least one power switch, the method comprising:

sensing current passing through the inductor using a thermally compensated current sensor connected to the output inductor, the thermally compensated current sensor having a temperature coefficient that substantially matches a temperature coefficient of the output inductor; and

operating the current feedback loop circuit to control the at least one power switch in response to the thermally compensated current sensor.

20. A method according to Claim 19 wherein the at least one power switch comprises at least one field effect transistor.

21. A method according to Claim 19 wherein the at least one power switch comprises a low side field effect transistor and a high side field effect transistor connected together.

22. A method according to Claim 19 wherein the thermally compensated current sensor is connected in parallel with the output conductor and comprises a resistor and a capacitor connected in series.

23. A method according to Claim 22 wherein the resistor of the thermally compensated current sensor comprises a positive temperature coefficient resistor.

24. A method of regulating a DC-to-DC converter comprising at least one power switch, a pulse width modulation circuit for generating control pulses for the at least one power switch, an output inductor connected to the at least one power switch, and a current feedback loop circuit cooperating with the pulse width modulation circuit for controlling the at least one power switch, the method comprising:

providing a sensed current related to a current being conducted through the output inductor using a thermally compensated current sensor connected to the at least one power switch, the thermally compensated current sensor having a temperature coefficient that substantially matches a temperature coefficient of an on-state resistance of the at least one power switch; and

operating the current feedback loop circuit to control the at least one power switch in response to the thermally compensated current sensor.

25. A method according to Claim 24 wherein the at least one power switch comprises at least one field effect transistor.

26. A method according to Claim 24 wherein the at least one power switch comprises a low side field

effect transistor and a high side field effect transistor connected together.

27. A method according to Claim 24 wherein the thermally compensated current sensor is connected between the at least one power switch and the current feedback loop circuit, and the thermally compensated current sensor comprises a resistor.

28. A method according to Claim 27 wherein the resistor of the thermally compensated current sensor comprises a positive temperature coefficient resistor.